

***United States Court of Appeals  
for the Second Circuit***



**BRIEF FOR  
APPELLEE**





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76-7490  
76-7514

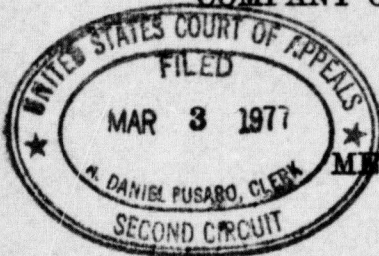
**United States Court of Appeals**

**For the Second Circuit**

**EUTECTIC CORPORATION, NEW METALS  
CORPORATION and METALIZING  
COMPANY OF AMERICA, INC.,**

*Plaintiffs-Appellees  
and Cross-Appellants,*

*v.*



**MITCO, INC.,**

*Defendant-Appellant  
and Cross-Appellee.*

**PLAINTIFFS-APPELLEES' BRIEF**

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# United States Court of Appeals

For the Second Circuit

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Docket Nos. 76-7490, 76-7514

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EUTECTIC CORPORATION, NEW METALS CORPORATION and  
METALLIZING COMPANY OF AMERICA, INC.,

*Plaintiffs-Appellees  
and Cross-Appellants,*

*v.*

METCO, INC.,

*Defendant-Appellant  
and Cross-Appellee.*

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## PLAINTIFFS-APPELLEES' BRIEF

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### Statement of the Issues

1. Did the District Court err in finding claims of a patent valid that simply describe a new use for a known product?
2. Did the District Court err in finding claims of a patent valid which cover a flame-spray material utilizing conventional ingredients which react in the known manner, to produce the expected result?
3. Did the District Court err in limiting the scope of the prior art by excluding from its consideration the broad-

er field of powder metallurgy, which includes the field of flame spraying?

4. Did the District Court err in limiting the scope of the prior art to what was *claimed* in prior patents rather than to what was *disclosed* in those patents?

### Statement of the Case

This is a cross-appeal by the plaintiffs, Eutectic Corporation, New Metals Corporation and Metallizing Company of America, Inc. (hereinafter collectively referred to as Eutectic as Eutectic Corporation is the manufacturer of the metal powder accused of infringing the patents in suit). The cross-appeal is from a judgment entered on August 31, 1976, in the United States District Court for the Eastern District of New York (Edward R. Neaher, D.J.). The judgment held claims 4 and 14 of U.S. Patent No. 3,322,515 (the '515 patent), and claims 1 and 4 of U.S. Patent No. 3,436,248 (the '248 patent) valid but not infringed (JA-101).\*

The action was commenced on January 24, 1972, by plaintiffs as a declaratory judgment action, requesting a declaration of non-infringement and invalidity of the patents (JA-2). Defendant, Metco, Inc. (hereinafter Metco) owner of the patents counterclaimed, charging infringement by each of the plaintiffs, and sought an injunction and damages (JA-10).

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\* References with the designation "JA" and "E" are to the Joint Appendix; references with the designation "Tr." are to the trial transcript. Plaintiffs' exhibits are designated with the prefix "PX," and the defendant's with the prefix "DX."



The case was tried by Judge Neaher, without a jury, beginning November 26, 1973, and continuing for 14 trial days through December 27, 1973.

On July 14, 1976, the District Court rendered its opinion (JA-16). On September 30, 1976, Metco filed a Notice of Appeal to this Court from that part of the judgment holding the claims in suit not infringed by the accused powder, and for awarding costs to Eutectic (JA-103). On October 5, 1976, plaintiffs filed a Notice of Cross-Appeal from that part of the judgment holding the claim in suit valid (JA-104).

Eutectic, having the posture of plaintiffs-cross-appellants, is required to initiate the briefing, per Rule 28(h) of the Federal Rules of Appellate Procedure. This brief, therefore, is limited to the issue of validity.

### **Statement of the Facts**

The patents in suit relate to the technique of spraying molten particles to coat a surface. Spraying is performed by use of a torch, the most common being an oxyacetylene gas-fired torch or gun. The torch is somewhat similar in appearance to the more familiar paint-spray gun often used in house painting. The torch is connected to a source of oxyacetylene or other gas, under pressure, which burns at a suitable temperature to melt the material undergoing spraying, and projects the material onto a surface. The form of the material fed into the torch may be either wire or powder.

The sprayed material may be any one or combination of metals and ceramics. The particular material selected is dependent upon many considerations, such as, compatibility with the substrate (i.e., the surface being coated) the melting point of the material, and the properties desired from the coating. For example, if the coating is to be applied to wearplates, it must exhibit high abrasion-resistance; if the coating is to be applied to a machine in a highly corrosive atmosphere, it must exhibit corrosion-resistance in that particular environment. The melting point of the material is important because the material must be made molten by the fired-gas and arrive at the substrate in the molten condition. Compatibility with the substrate material is important where it is desired to obtain a chemical or metallurgical bond, i.e., an alloying between the sprayed material and the substrate.

The '515 patent is directed to a material for flame spraying, and the '248 patent is directed to a conventional process for flame spraying the material of the '515 patent.

#### **The '515 Patent**

This patent (E-805), is directed to a flame-spray material formed of two components, i.e., a pair (142 pairs of suitable components are listed in the Table appearing in column 15 of the patent) which react "exothermically" with each other when melted to form an intermetallic compound (See statement of invention, at col. 2, lines 51-56 of the '515 patent). The expression "exothermic" simply means that the reaction generates heat. For example, the striking of a match and the burning of coal are exothermic reactions. Metals which react exothermically when molten is pedestrian knowledge in the trade; and, in fact, the co-

patentee Dittrich testified that he obtained the identification of the metal pairs specified in the Table of his patent from a handbook (Tr. 1137).

The asserted Claims 4 and 14 are specific to a nickel-aluminum pair. Claim 4 specifies that the material shall be "composite" in form, and "characterized by the ability of generating heat during flame spraying [exothermic] which aids in bonding to the surface being sprayed."

Claim 14 describes the material as a powder "comprising a nucleus of nickel and a coating layer of finely divided aluminum particles bound to the nucleus with a binder." This claim also mentions the heat-generating ability of the powder which, of course, "aids in bonding."

The word "composite" is defined in the patents at column 2, lines 57-70, to mean a structurally integral unit. The physical relationship between the components must be such that they react exothermically to form an intermetallic compound.

The additional generation of heat, resulting from the intermetallic reaction, of course, "aids in bonding." Additional heat always aids in bonding. Typically, the additional heat raises the temperature of the coating material which facilitates the alloying between the substrate and the sprayed material. The "alloying" produces the bond.

#### **The '248 Patent**

This patent is directed to an admittedly conventional process of flame spraying; it relies for its novelty on the material being sprayed, which is the material of the '515 patent. The asserted claims are Claims 1 and 4.



Claim 1 describes a process for flame spraying a composite of at least two components which will exothermically react at the torch temperature and form an intermetallic compound.

Claim 4 specifies that the two components are nickel and aluminum.

#### **Circumstances Leading to the Patented Material**

During the early 1950's, Metco was primarily involved in the business of selling flame-spray wire material, although others in the field were manufacturing and selling powder-spray equipment and flame-spray powders, including nickel and aluminum powders (Tr. 954, 959, 960, 965, 966). At that time, Shepard and Dittrich (the co-patentees of the patents in suit) were assigned to work with the Climax Molybdenum Company (Climax) to produce a coating of nickel aluminide on a molybdenum surface by flame spraying nickel and aluminum powder (Tr. 1028). Nickel aluminide, an intermetallic compound, was known to have high-temperature characteristics, and was requested by Climax as the coating material (Tr. 1030). Long prior to the earliest dates of the patents in suit, and indeed long prior to their work with Climax, the compound nickel aluminide, its characteristics, properties, and methods and parameters for compounding were routine knowledge to the powder metallurgist. A nickel-aluminum phase diagram (PX-66) illustrates the various combinations of nickel and aluminum, in terms of proportions of nickel to aluminum, that are required to produce the intermetallic compound nickel aluminide. The diagram is significant in its showing (which is accepted as a technical truism) that to obtain the inter-

metallic nickel aluminide, the composition of the final reacted product must include at least 10% aluminum by weight (Tr. 92, 115, 643).

It was also a known property of nickel and aluminum that they were capable of reacting exothermically, if in composite or equivalent form, and when subjected to a temperature at least sufficient to melt the aluminum (Tr. 157-9, 1036, 1051, 1055, 1057, 1062, 1067).

In 1955, after completing their work on the Climax project, Dittrich concluded that nickel and aluminum would be suitable as a flame-spray material if the components were formed as a composite. In a more generic sense, it was Dittrich's conclusion that a composite of any two exothermically reactable components would be suitable as a flame-spray material. (This will become more apparent later from the discussion on the history of the patent applications in the Patent Office.) Further, at the time of Dittrich's work at Climax, he was not aware that exothermically reactable flame-spray materials were well known in the field.

**The Patented Composite Powder Is  
Originated by Another Company.**

A company called Sherritt Gordon Mines Limited (Sherritt Gordon), in 1959, announced to the powder metallurgy trade that it had developed a technique for forming composite metal powders, including a composite powder having an aluminum core (Tr. 1069)\*.

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\* This composite is described in a prior art patent to Mackiw, assigned to Sherritt Gordon, which is described later in the brief.

Upon seeing the announcement, Dittrich ordered from Sheritt Gordon a quantity of nickel-aluminum composite powder of a size suitable for flame spraying (Tr. 1167); the proportion of aluminum was specified to exceed 10% so that the reacted intermetallic compound would be nickel aluminide (Tr. 1056, 1078, 1080, 1082).

After receipt of the powder from Sheritt Gordon, Dittrich sprayed it using the conventional flame-spray equipment, and, as expected, the material coated and bonded satisfactorily to the substrate (Tr. 1057, 1080-82).

There was no demand for the product, and Metco did nothing towards commercializing it until 1963, when Metco first offered its nickel-aluminum powder, which it called "404." (Tr. 1280).

The Metco 404 powder composite obtained from Sheritt Gordon consisted of an aluminum core clad by nickel in the proportions of 80% nickel to 20% aluminum. When sprayed, the components reacted exothermically and resulted in the intermetallic nickel aluminide coating.

#### **The Accused Powder**

In 1970, Eutectic formulated its own nickel-aluminum powder, a material substantially different from the patented material, and which was found by the court not to infringe the patents in suit.

Long prior to the formulation of the patented powder, aluminum powder was known in the flame-spray field as a heat-generating, exothermically reacting material when



used with another material. When aluminum is used primarily as an exothermic material, its proportional presence is relatively small so as not to form an intermetallic compound with the other metal, and the aluminum essentially burns off. In the parlance of the metallurgist, it "oxidizes." Thus, the use of aluminum as a flame-spray exothermic material was admittedly conventional long prior to the patents in suit (Tr. 583, 584).

Eutectic followed the conventional practice, and formulated a powder consisting of a nickel core sparsely and spatially surrounded by aluminum powder, in a proportion of 5% or less by weight. The aluminum powder is not a composite with the nickel, as defined in the patents in suit, but is spaced from the nickel core by a resin binder which agglomerates the particles together. Moreover, as can be readily visualized, when the powder is subjected to the temperature of the flame, the resin is instantaneously vaporized leaving the aluminum as a cloud partially surrounding the nickel core. The burning point of the aluminum is far lower than the melting temperature of the nickel so that the aluminum ignites (much like a fireworks sparkler) and imparts its exothermic heat to the nickel.

Most significantly, however, there is no exothermic reaction between the two components to form any intermetallic compound; i.e., there is no nickel aluminide intermetallic present in the coating resulting from the sprayed Eutectic powder.

### **A Review of the Patent Office Proceeding Leading to the '515 Patent**

The Rules of the Patent Office permit repeated refilings of a patent application so that a persistent solicitor can, and often does, obtain a patent simply by exhausting the time and energy of the Patent Examiner.\*

The '515 patent is a result of four refilings of the application. The Examiner consistently considered the subject matter obvious and non-inventive, and repeatedly rejected the claims. He saw nothing unobvious in the use of the known exothermic pairs in the conventional flame-spray process to obtain a known compound having only the well-published properties.

Four filings later and six years after the first filing, the Examiner maintained his position, and again rejected the last-filed application. This last rejection was followed by a personal interview between Metco's counsel and the examiner, and for reasons indicated by Judge Dooling in his criticism of oral interviews\*\*, the result was the allowance of the patent.

### **There Is Nothing Unique About the Nickel-Aluminum Pair.**

In the first two of the abandoned applications, Metco urged that its "invention" resided in a material consisting of *any* two exothermically reactable materials. Indeed, Ditrach listed 130 combinations in the application of suitable

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\* Judge Learned Hand's comment in *Lyon v. Boh*, 1 F.2d 48 (S.D.N.Y. 1924), regarding the "ant-like persistency" of solicitors, and the predictable outcome of patents obtained in that manner when they reach Court, is particularly appropos here.

\*\* APLA Bulletin, Oct-Nov. 1970, at 550-51.



pairs which he obtained from a published reference source (Tr. 1090, 1092, 1137). In a patent sense all 130 stand on equal footing, and no one is any more unique than another; nickel-aluminum is but one of the 130 pairs. It can hardly be said that any one pair in a fungible group of 130 is unique.

Another exothermic pair, originally listed by Dittrich and disclosed as an example of the "invention" in the early applications for patent (PX-1, 2), was nickel-phosphorus. Although there is some question as to whether phosphorus is technically a metal, the nickel-phosphorus material in composite form was tested by Dittrich who observed that the exothermic reaction produced an intermetallic compound (Tr. 1085-86, 1119, 1184). Moreover, the patentees admit in their second application (PX-2, p. 6), that nickel and phosphorus react exothermically to produce an intermetallic compound.

The significance of the prior art nickel-phosphorus pair to this lawsuit is that it was originally specified as one of the examples of the "invention" claimed in the patents in suit. From the patent viewpoint, Metco was attempting to cover within its patent monopolistic umbrella, all 130 pairs listed in the patent. Conversely, of course, if the prior art disclosed any one of the 130 pairs, the entire umbrella would collapse as all 130 pairs are necessarily deemed "equivalents" to achieve coverage in a single patent. It is an axiom of patent law, that a patentee is entitled to one patent for one invention. The 130 pairs are merely different examples of one alleged invention.

As mentioned, during the prosecution of the second application (PX-2), which included the nickel-phosphorus,

the Examiner issued a requirement for restriction\* (PX-2, p. 67). In support of his requirement, the Examiner cited a prior patent to Gutzeit (E. 852). As was customary under such circumstances, there was no discussion by the Examiner regarding the technical content of the Gutzeit patent.

Significantly, the prior Gutzeit patent disclosed the nickel-phosphorus flame spray exothermically reactable, composite powder similar to the nickel-phosphorus example disclosed in the second Metco application.

Metco then abandoned the second application, filed a third application, but this time, with something less than candor, inconspicuously omitted the nickel-phosphorus example from the application. Thereafter, the Gutzeit patent escaped the attention of the different Examiners who subsequently allowed the patents. The invalidating effect of the Gutzeit patent will be discussed in greater detail later in the brief.

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\* In the second application, Metco included claims directed to the material as well as to the process for making the material. This is contrary to the Rules of Patent Office Practice, and when such improper claiming occurs, the Examiner requires a "restriction"; i.e., that one set of the claims be elected for prosecution in the instant application, and the other set of claims be filed in another separate application. Normally, when the Examiner issues his requirement for restriction, he will cite, by way of example, a few patents from one classification which only embody claims to a material (albeit a different material), and a few patents from another classification which only embody claims to a process. He cited these patents for purposes of supporting his requirement for restriction; those patents are not applied for their technical content, and the application undergoing examination is not, at that time, considered on its merits.



## **The Prior Flame-Spray Materials**

### ***a. Exothermically Reactable Pairs***

Dr. Grant of Massachusetts Institute of Technology testified on behalf of Eutectic as an expert witness in the field of powder metallurgy and powders for flame spraying. In his description of the prior art flame-spray powders, Dr. Grant explained that the Gutzeit patent disclosed a composite powder for use in flame spraying in which the components, nickel and phosphorus, would react exothermically when sprayed to form the intermetallic compound nickel phosphide (Tr. 141, 147, 649). Dr. Grant's theoretical analysis confirmed Dittrich's earlier observations when Dittrich tested nickel-phosphorus (Tr. 1085-86, 1119, 1184). Nickel aluminide and nickel phosphide are well-known compounds of nickel (Tr. 148-9, 651).

The Mackiw patent (E-839), referred to earlier in the brief in connection with the Sherritt Gordon powder that gave rise to the patents in suit, discloses the identical composite now claimed by Metco (Tr. 131). The Mackiw composite powder consists of a nickel-called aluminum core suitable for flame spraying (Tr. 144, 146).

*Dittrich frankly admitted he did nothing more than to use the Mackiw powder in the Conventional flame-spray process (Tr. 1080, 1082, 1083).*

***b. Composite Powder Materials for Use in Flame Spraying***

Composite materials, other than nickel and aluminum, for use in flame spraying were also known long prior to Dittrich's work (Tr. 1422, 1424). Shwayder, No. 3,049,435 (E-867), discloses a nickel tungsten-carbide composite. Bleakley, No. 2,231,247 (E-827), discloses a copper-lead composite. Montgomery, No. 2,775,531 (E-835), discloses a nickel and metal oxide composite. Mackiw, No. 2,853,403 (E-839), in addition to disclosing the nickel-aluminum composite, discloses 35 different core metals, and 13 different clad metals for use in making composites.

***c. The Use of Aluminum Powder in Flame Spraying as Exothermic Material and as an Aid in Bonding***

It was long known in the prior art that the oxidation of aluminum burned with intense heat, and the superheat (i.e., the additional heat) aided in bonding the sprayed material to the substrate.

A patent to Haglund, No. 2,943,951 (E-864), discloses a flame-spray powder comprising a refractory, such as silica, and aluminum for its exothermic property. For example, at col. 1, lines 5-67:

"The reaction between aluminum and silicon dioxide [silica] is exothermic in nature \* \* \*. This action depends thereon that said oxides give an intense reaction heat with aluminum whereby the reaction product adhering to the surface show an increased superficial activity."

That is another way of saying that the additional heat aids in bonding.



A patent to Bradstreet, No. 2,904,449 (E-847), discloses a flame-spray powder which includes the use of aluminum specifically as a flame catalyst, to burn exothermically and thereby raise the temperature of the powder undergoing spraying, which, of course, aids in bonding. See particularly, col. 5, lines 35-47 and col. 6, lines 16-18.

The use of aluminum in the Eutectic accused powder is exactly as in the prior art. It is used as a flame catalyst to increase the temperature of the nickel and aid in bonding the nickel to the substrate. Unlike the patents in suit, the accused powder does not result in an intermetallic compound. The aluminum simply burns off.

***d. Prior Knowledge that Aluminum and Nickel React Exothermically to Form an Intermetallic Compound***

The skilled engineer in the field of powder metallurgy understood well the characteristics and properties of nickel and aluminum, their exothermic-reaction temperatures, and the formation of the intermetallic compound nickel aluminide. The information was available in the published literature. For example, patents to Herz, No. 2,884,688 (E-844) and to Grala, No. 2,910,356 (E-858) teach that nickel and aluminum in the proper proportions and in composite form exothermically react to form the intermetallic compound, nickel aluminide (Tr. 135, 138-9, 143, 588, 590, 630, 1659). Indeed, the only difference between the material of the Herz patent and the material of the '515 patent is the size. Herz discloses a slug, but, if the slug were made into wire size, there would be no difference (Tr. 2048).

***e. Techniques for Forming the Composite Powders Claimed in the Patents Were Common Knowledge.***

The '515 patent in suit discloses two types of composites. The first is the precipitation of the cladding metal on a core metal. This technique is disclosed in the prior Mackiw patent, and, in fact, Fig. 1 of the '515 patent in suit is essentially a copy of the illustration in Fig. 1 of the prior Mackiw patent (E-839). The second form of composite is an aluminum powder cladding on a nickel core secured by a binder. This latter technique is disclosed in a prior patent to Hensel, No. 2,370,242 (E-832). Although the Hensel patent is not expressly directed to flame-spray powders, it discloses clad powders that are of a size suitable for flame spraying. Claim 14 of the '515 patent claims a powder made in accordance with the technique of the Hensel patent. It is noteworthy that Metco attempted in another application to obtain a patent directed to the "binder" technique of forming a particle (PX-4). The Patent Office, however, rejected the application as unpatentable over the prior art, such as Hensel, and Metco abandoned that application. Thus, Metco acknowledged it was not entitled to a patent for the binder process of making a nickel aluminum powder, but nevertheless obtained claim 14 in the '515 patent specifically directed to the binder formulated powder.

***The Level of the Ordinary Skill in the Art***

The level of the skilled person applicable herein is that of a highly skilled scientist. He is the skilled worker engaged in engineering research and development in powder metallurgy and flame spraying, and holds degrees in metallurgy and physical chemistry including advanced degrees to the doctorate level (Tr. 80, 674).



## ARGUMENT

### Summary

The district court found the patents valid primarily on the basis that the patented material and process were unobvious in that they produced a "self-bonding" coating.

The prior art, however, disclosed all elements of the claimed flame-spray material, including the use of heat obtained from an exothermic reaction to improve bonding or produce self-bonding. For example, flame-spray materials that use aluminum which react exothermically to generate additional heat to aid in bonding were known in the prior art. Also known to the prior art was the fact that nickel and aluminum, when in the form of a composite in the proper relative proportions, will, when heated, react exothermically to form an intermetallic compound.

Moreover, the patentees admittedly did nothing more than use the Sherritt Gordon (Mackiw) composite powder in a flame-spray environment.

Finally, the patentees admitted to the invalidity of their patents when they claimed in their earlier applications the nickel-phosphorus composite as the full equivalent of nickel-aluminum. The nickel-phosphorus composite for use in flame spraying being disclosed in the prior art renders the patents in suit invalid.

## The Patents Are Invalid.

### The Primary Tests of Obviousness

#### a. The Relevant Prior Art

The relevant prior art consists of prior patents and publications available at the time the alleged invention was made, even though the patentee may not have had actual knowledge of the prior art; *David & David, Inc. v. Meyerson*, 388 F.2d 292 (2 Cir. 1968). The question is "what would have been obvious to a hypothetical person who did have knowledge of the prior art."; *Indiana General Corp. v. Krystinel Corporation*, 421 F.2d 1023 (2 Cir. 1970); and "who, among other things has the prior art in mind when he endeavors to solve the problem for which the patent is obtained."; *Formal Fashions, Inc. v. Braiman Bows, Inc.*, 369 F.2d 536 (2 Cir. 1966).

Moreover, the pertinent art is not limited to flame spraying but "to the art to which one can reasonably be expected to look for a solution to the problem which the patented device attempts to solve." *Burgess Cellulose Company v. Wood Flong Corp.*, 431 F.2d 505 (2 Cir. 1970).\*

The District Court initially erred in divorcing the art of flame spraying from the art of powder metallurgy (JA-60). The Court thus de-valued the importance of prior art pater to Mackiw, Hensel, Herz and Grala which on their face are extremely pertinent. The record establishes that

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\* In *Calmar v. Cook Chemical Corp.*, sub nom, *Graham v. John Deere*, 383 U.S. 1, 35, the Supreme Court found that the patentee's view of the prior art was overly restricted and that devices in a related art were "at the very least pertinent references."



the fields are closely related. Technical treatises refer to flame spraying of powder as part of the broader powder metallurgy field (PX-72, 73). Metco, a company in the flame-spraying field, subscribed to literature in the powder metallurgy field and in that way learned of the Sherritt Gordon (Mackiw) powder. Further, the Patent Office considered the fields related as the Examiner cited in Mackiw, Herz, and Grala patents during the prosecution of the patents in suit; at no time did Metco argue to the Patent Office that such patents were directed to an unrelated field. Indeed, the '515 patent was assigned to a class in the Patent Office which was a broad metallurgical class.

The District Court further erred by improperly limiting the teaching of the prior patents to only what was claimed in those patents, rather than to what was disclosed in those patents. It has long been well settled that a prior patent is to be employed in determining patentability for what is disclosed in the patent specification, drawings, and claims, and not merely to the scope of its claims, *Minerals Separation North American Corporation v. Magma Copper Company*, 280 U.S. 400 (1930).

As an example of the improper scope given the prior art, the District Court (JA-55) limited the Mackiw patent to what was covered in its claims, that is, a method for making the composite, although Mackiw clearly discloses in its specification and drawings, a composite metal powder, including a composite powder of nickel and aluminum. By so doing, the District Court improperly and unnecessarily minimized the scope and relevance of Mackiw and other prior patents to the patents in suit.

***b. The Scope and Content of the Prior Art Substantially Anticipates the Claims.***

The claims essentially call for a nickel-aluminum composite powder for use in flame spraying, wherein the powder reacts exothermically to produce an intermetallic compound and the extra heat aids in bonding.

The prior art directly points the way to the patented material and process. It was known, for example, that additional heat derived from an exothermic reaction, such as the burning or oxidation of aluminum, would aid in bonding; the prior Haglund and Bradstreet\* patents disclose that feature. It was also known that the additional heat derived from an exothermic reaction involved in producing an intermetallic compound would aid in bonding; e.g., the Gutzeit patent (Tr. 141, 147, 153, 554, 564, 649, 2133-34).\*\*

The only difference between the patented material and the Gutzeit composite powder is that the former includes nickel and aluminum, whereas the latter consists of nickel and phosphorus (Tr. 148, 650). Clearly, if a nickel aluminide coating were desired instead of a nickel phosphide coating (as taught by Gutzeit), aluminum would simply be substituted for the phosphorus (Tr. 148). That is all the patentees did.

Further, the nickel and aluminum composite particle of the '515 patent is one of the several composites disclosed in the Mackiw patent (Tr.131). Mackiw's composite parti-

\* (Tr. 142, 143, 154, 500, 503, 516, 583, 585-586, 1646, 2021, 2030, 2031, 2032-3).

\*\* Note Gutzeit patent, col. 1, lines 23-26; Goldstein, et al. article (co-authored by Gutzeit) (E-869), p. 104, last line of abstract.

cles are within the range of sizes used in flame spraying (Tr. 144, 146), and the selection of the proper size of a Mackiw composite powder for use in flame spraying is well within the skill of the average engineer (Tr. 143, 1167). The Mackiw patent states that the composite power has utility in the field of powder metallurgy which, as noted, includes flame spraying (Tr. 79, 143, 488, 648; PX-72, 73). Significantly, there is no difference between the subject matter of the claims of the '515 patent in issue and the composite powder disclosed in the Mackiw patent. The patentees in their patents merely claimed a use for the Mackiw powder.

Further, the prior art, as exemplified by the Herz and Grala patents, indicates that it was known prior to the patents in suit that nickel and aluminum in the proper proportions and in composite form would react together in an exothermic reaction to form the intermetallic compound, nickel aluminide (Tr. 135, 138-9, 143, 588, 590, 630).

There is also no dispute that flame-spray materials in the form of a composite were known prior to Dittrich's work (Tr. 1422, 1424). For example, the prior patents to Schwayder (E-867) and Bleakley (E-827) disclose the use of composites in flame spraying (Tr. 133, 134, 569, 580, 1655, 1658, 2031, 2034). Composite materials for flame spraying are also disclosed in the patents to Montgomery (E-835) and Bradstreet (E-847) (Tr. 134, 142).

The Court below sought to distinguish the patents over the prior art on the ground that the patented materials were "self-bonding" to the surface; that is, the sprayed coating would alloy or bond to the surface without prior



preparation of the surface, whereas, the prior art patents recommend cleaning or otherwise preparing the surface before spray coating (JA 65-67). In fact, however, every example specified in the patents in suit recommends, just as in the prior patents, that the surface be cleaned and roughened before applying the coating.

Dr. Grant explained that what Metco calls "self-bonding" is merely a result of the sprayed powder arriving at the surface in a sufficiently heated and molten condition to allow the material to alloy or weld to the substrate (Tr. 155).

The prior Gutzeit, Montgomery, Schwayder and Bradstreet patents all disclose a flame-spray material which, when heated and sprayed onto a surface, alloys or chemically reacts with the surface to form good adherence or bonding to the surface (Tr. 153, 155, 241, 246, 521, 559-60, 573, 576, 580). In other words, the prior art discloses flame spray materials which also "self-bond" to the surface to the same extent as the patented materials.

#### **The Claims Merely Describe a New Use for an Old Material.**

The District Court found that Mackiw discloses one mode of forming the nickel-aluminum composite claimed in Claim 4 of the '515 patent, and Hensel discloses the other mode claimed in Claim 14 of the '515 patent. Both prior patents were concerned primarily with a process for making the composite for use in powder metallurgy. They left only the application of the composite powder to the "skill of the art".

The nickel-aluminum composite defined in the claims in suit is admittedly the same material as disclosed in the Mackiw and Hensel patents, and except for size, in the Herz and Grala patents. The claimed material is, therefore, "old" in the patent sense, and the patent claims merely specify a "use" of the old material in a flame-spray environment. Under the law, however, the public is free to "use" any material of the prior art in any manner it desires, and a patent which attempts to frustrate such freedom of use is invalid as a matter of law.

This Court in *Old Town Ribbon & Carbon Co. v. Columbia Ribbon & Carbon Mfg. Co.*, 159 F.2d 379, 382 (2 Cir. 1947), per Judge Learned Hand speaking for the Court, stated the principle of law as follows:

"\* \* \* If it be merely for a new employment of some 'machine, manufacture or composition of matter' already known, it makes not the slightest difference how beneficial to the public the new may be, how long a search it may end, how many may have shared that search, or how high a reach of imaginative ingenuity the solution may have demanded. All the mental factors which determine invention may have been present to the highest degree, but it will not be patentable because it will not be within the terms of the statute. This is the doctrine that a "new use" can never be patentable. In this circuit we have many times applied it, and it has been recognized elsewhere."

The doctrine has been followed and reiterated, since the 1952 revision of the Patent Statute (35, United States Code) in *Application of Hack*, 245 F.2d 246 (CCPA 1957). In that case, the claims in issue were for a brazing alloy having a specified composition. The same or equivalent

composition was disclosed in three prior patents for use in applications other than brazing. The court said at page 248:

“ \* \* \* But a patent on an old product, based on its new use, has never been authorized by the patent laws which provided for patents only on a new and useful art, machine, manufacture, or composition of matter, or any new and useful improvement thereof.”

See also, *In re Thuau*, 135 F.2d 344, 347 (CCPA 1943), and *Exer-Genie, Inc. v. McDonald*, 453 F.2d 132, 134 (9 Cir. 1972).

The '248 patent admittedly claims a conventional process for flame spraying the nickel-aluminum composite of the '515 patent (PX-12, col. 6, lines 25-29). The process of Claim 4 simply recites the single step of passing the material through the heating zone. An “old” process which relies for its novelty on a “new” starting material or a “new” end product is similarly defective as a matter of law. In the case of *Application of Kanter*, 399 F.2d 249, 251 (CCPA 1968), the court was confronted with claims reciting a conventional process for coating a metal article with a new alloy. The court held such claims were unpatentable as a matter of law, even assuming that the selection of the starting alloy was not obvious.

In addition, any so-called “unique” qualities of the coating produced by the patented method are admittedly “inherent” and thus “necessarily achieved” from the choice of the starting composition (Tr. 624, 1446-47).

In the '248 patent, patentability is predicated on the alleged novelty of the starting material. But, in the '515



patent, that same material is admittedly old in the art, and patentability is predicated on a "new" use. Both forms of claims in the two patents are invalid as a matter of law.

### **The Patented Subject Matter Is Obvious.**

To be the subject of a valid patent, the patentee's contribution must be "new" (35 U.S.C. 102), and not "obvious" to one of ordinary skill in the art at the time the alleged invention was made (35 U.S.C. 103).\*

The requirements for patentability are "rigorous"; *Lemelson v. Topper Corp.*, 450 F.2d 845 (2 Cir., 1971), and are to be carefully and strictly observed; *Anderson's-Black Rock v. Pavement Salvage Co.*, 396 U.S. 57, 62 (1969). To do otherwise, and uphold validity where an invention is obvious, would give the patentee an unwarranted economic weapon that could be used in derogation of the public interest and would allow the patentee to "remove existing knowledge from the public domain or to restrict access to materials already available." *Graham v. John Deere*, 383 U.S. 1, 6; *Continental Can Company v. Old Dominion Box Company*, 393 F.2d 321 (2 Cir. 1968).

The prior art in this case reveals every facet of the patented subject matter. There was no advance made by

\* Section 103 reads:

"Conditions for patentability; non-obvious subject matter. A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains. Patentability shall not be negated by the manner in which the invention was made."

the patentees, no increment of knowledge added to the existing fund of knowledge. If a coating of nickel aluminide were desired, reference to the phase diagram (PX-66) would indicate the proportions required. It was known that nickel and aluminum would react exothermically to produce the intermetallic compound, nickel aluminide. Even the increment of additional heat was known from the tables.

It was also known that an exothermic reaction would be implemented by structuring the composite so that the components were in intimate contact with each other. It was known that heat would aid in bonding the coating to the surface. Thus, to form nickel and aluminum in a composite form to promote an exothermic intermetallic reaction is merely routine engineering which does not rise to the level of invention required to sustain a patent; *Wallace v. F. W. Woolworth*, 133 F.2d 763 (2 Cir. 1943).

The skilled metallurgist given the teaching of the Gutzeit patent and desiring a nickel-aluminide coating instead of a nickel phosphide coating would have to do nothing more than to substitute a nickel-aluminum composite material for Gutzeit's nickel-phosphorus composite material (Tr. 148, 651). Nothing in the literature would discourage such substitution (Tr. 149).

#### **The Argument on Self-Bonding Is Contrived.**

Metco's trial strategy was to create an aura of mystery about the "self-bonding" characteristic of the nickel and aluminum composite. There is, however, nothing mysterious about the bonding ability of the nickel-aluminum powder or indeed any other material.



Bonding is simply an attachment between the coating and the surface which results when the coating material is heated to a temperature that will cause a localized melting of the surface, thereby producing a chemical or metallurgical bond (Tr. 1827). In such a bond the coating material is fused, welded, or alloyed to the surface (Tr. 1143, 1833). This, of course, was known long prior to the patents in suit (Tr. 155, 156). Thus, when the sprayed material arrives at the substrate at a sufficiently high temperature to cause localized melting of the substrate, the coating is said by Metco to self-bond; others refer to it as welding, or chemical bonding or alloying. However designated, it is the same bond.

**The Purported Patentable Feature  
Is Not Recited in the Claims.**

Apart from being incapable of distinguishing the patented material over the prior art, the "self-bonding" feature is not recited in any of the patent claims; thus, even if this feature were novel, the patent claims would still be invalid. This Circuit, in *Maclaren v. B-I-W Group, Inc.*, 535 F.2d 1367, 1374 (2 Cir. 1976), has recently held that the *claims* of the patent must include a recitation of those features that allegedly distinguish the "invention" over the prior art; otherwise, the claims are invalid.

See also, *Koppers Co., Inc. v. S. & S. Corrugated Paper Machine Co., Inc.*, 517 F.2d 1182, 1188 (2 Cir. 1975).

The claims on appeal state that the additional (exothermic) heat "aids in bonding". The record establishes that additional heat always aids in bonding the coating to

the substrate. The prior art is replete with powders that produce the additional heat when used in flame spraying, and thereby aid in bonding. This is all the prior art need show to invalidate the *claimed* material and process.

**The Presumption of Validity Is Weakened as Pertinent Prior Art Was Not Considered by the Examiner.**

The most significant prior art patent to Gutzeit (Tr. 661) was not considered by the Examiners who allowed the patents in suit for its technical content; it was mentioned by a different Examiner (in an earlier application, long abandoned before the applications leading to the patents were filed) only to support the earlier Examiner's requirement for restriction. In stating that the Patent Office did consider Gutzeit in granting the patents, the District Court was simply in error. There is no presumption that the later Examiners considered the Gutzeit reference on its merits. Indeed, at the end of each of the patents, there is a section entitled "References Cited", and a review of that section indicates the absence of any mention of the Gutzeit patent.

Incredibly, the Examiner who allowed the '515 patent also failed to cite any of the other prior patents showing a composite flame-spray material, such as the Schwayder, Bleakley, Haglund, and Montgomery patents. The statutory presumption that normally attaches to a patent is, therefore, severely weakened, if not completely destroyed; *Lorenz v. F. W. Woolworth Co.*, 305 F.2d 102; *Reeves Brothers, Inc. v. U. S. Laminating Corp.*, 417 F.2d 869 (2 Cir. 1969); *Formal Fashions, Inc. v. Braiman Bows, Inc.*, 369 F.2d 536 (2 Cir. 1966).

Finally, on this issue, when the Examiner cited Mackiw as a reference, Metco urged that *none* of the combinations disclosed in the Mackiw patent was "exothermically reactive" to form an intermetallic compound: (PX-5, pp. 76-77); the fact, however, is that Mackiw discloses nickel and aluminum, in addition to at least nine other exothermically reacting metal pairs\* that also appear in Table I of the patents in suit.

This erroneous and misleading statement to the Examiner further weakens the presumption of validity, *Marasco v. Compo Shoe Manufacturing Corp.*, 325 F.2d 695, 697 (1 Cir. 1963).

#### **The Secondary Indicia of Patentability Are Also Absent.**

First, there is no evidence of any substantive nature, either through contemporary documents or through live witnesses, to show that others had unsuccessfully attempted to develop a nickel-aluminum flame-spray material.

It is recalled, Dittrich began his work with nickel and aluminum in 1955, at which time he had no knowledge of any problems in the flame spraying field or of any attempts by others to produce a powder having better bonding characteristics (Tr. 984).

The lack of demand problem in the flame-spray field is further highlighted by the fact that Dittrich and Shepard did nothing for four years after their initial work on the nickel-aluminum powder (Tr. 1067-68). Their interest in

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\* Some of these pairs are: AlAs; AlCo; AsCd; AsZn; AlAu; BeNi; InRu; SnZr; BeCo.



the program was revived only when they saw the Sherritt Gordon announcement of the availability of a nickel-aluminum composite (Tr. 1069; PX-52).

After Dittrich, in 1959, learned of the Sherritt Gordon composite powder, he obtained and tested a quantity of the powder (Tr. 1073, 1083). The powder, of course, sprayed and coated satisfactorily, as expected (Tr. 1083). Dittrich again reported his findings to management (Tr. 1083). And yet another four years passed before Metco first marketed the patented 404 powder (Tr. 1280). All that was required of Metco in 1959, if there were a need for the product, was to have labels printed; everything else had been done by Sherritt Gordon. One cannot imagine more telling evidence of the *absence* of need, *Burgess Cellulose Company v. Wood Flong Corp.*, 431 F.2d 505, 508 (2 Cir. 1970); *Ruben Condenser Co. v. Aerovox Corp.*, 77 F.2d 266 (2 Cir. 1935); and *Minton Mfg. Co. v. Continental Briar Pipe Co.*, 93 F.2d 271 (2 Cir. 1937).

Metco attempted to prove commercial success of the patented powders by including sales of the Metco 450 powder, and powder blends containing the 450 and 404 powders. The Metco 450 powder is similar to the accused powder in structure and proportions of nickel and aluminum, and, as found by the District Court, clearly does *not* come within the scope of the patents. Sales of the 404 powder (the patented powder) are relatively miniscule.

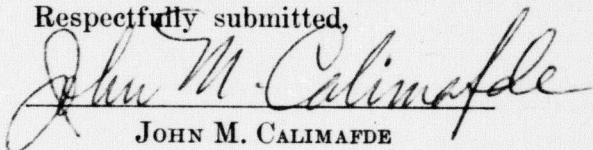
Moreover, it is well settled that commercial success and the solution of a long standing need in the art, even if demonstrated, are "secondary considerations" which cannot breathe life into, or validate, a patent otherwise invalid

under the primary tests of obviousness; *Anderson's-Black Rock v. Pavement Salvage Co.*, 396 U.S. 57, 62 (1969); *Graham v. John Deere*, 383 U.S. 1; *Continental Can Company v. Old Dominion Box Company*, 393 F.2d 321, 326 (2 Cir. 1968; and *Preuss v. General Electric Co.*, 392 F.2d 29 (2 Cir. 1968).

### Conclusion

The judgment finding the patents valid should be reversed; the judgment finding the patents not infringed should be affirmed; and the case should be remanded to the District Court for entry of a judgment finding the patents invalid and not infringed.

Respectfully submitted,

A handwritten signature in cursive script, reading "John M. Calimafde". The signature is written in dark ink and is positioned above the printed name.

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Service of 2 copies of the  
within Brief is hereby  
admitted this 3rd day of

March 1977

Signed William H. Graves

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